CETHA-BC-CR-90115

U S A T H A M A

U.S. Army Toxic and Hazardous Materials Agency

Report of Sampling and Analysis Results

Milford Army Housing Units
Milford, Connecticut

August 1990

Prepared for:

U.S. ARMY TOXIC AND
HAZARDOUS MATERIALS AGENCY
Aberdeen Proving Ground
Maryland 21010-5401

Prepared by:

WESTON®
MANAGERS DESIGNERS/CONSULTANTS

Under the supervision of:

Environmental Assessment and
Information Sciences Division
Argonne National Laboratory
Argonne, Illinois 60439

NOTICE

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as official Department of the Army position, policy, or decision unless so designated by other documentation.

The use of trade names in this report does not constitute an official endorsement or approval of the use of such commercial products. This report may not be cited for purposes of advertisement.

CETHA-BC-CR-90115

Report of Sampling and Analysis Results Milford Army Housing Units Milford, Connecticut

August 1990

Prepared for:

U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground
Maryland 21010-5401

Prepared by:

Under the supervision of:

Environmental Assessment and
Information Sciences Division
Argonne National Laboratory
Argonne, Illinois 60439

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Distribution Unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S) CETHA-BC-CR-90115
6a. NAME OF PERFORMING ORGANIZATION ROY F. WESTON, INC. 6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION Environmental Assessment & Information Sciences Division Argonne National Laboratory (for USATHAMA)
6c. ADDRESS (City, State, and ZIP Code) Roy F. Weston, Inc. Weston Way West Chester, PA 19380	7b. ADDRESS (City, State, and ZIP Code) Argonne National Laboratory 9700 S. Cass Avenue Argonne, IL 60439
8a. NAME OF FUNDING/SPONSORING ORGANIZATION U.S. Army Toxic & Hazardous Materials Agency 8b. OFFICE SYMBOL (If applicable) CETHA-BC	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER U.S. Department of Energy Contract W-31-109-ENG-38
8c. ADDRESS (City, State, and ZIP Code) U.S. Toxic & Hazardous Materials Agency Attn: CETHA-BC Aberdeen Proving Ground, MD 21010-5401	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) UNCLASSIFIED Report of Sampling and Analysis Results: Milford Army Housing Units Milford, Connecticut	
12. PERSONAL AUTHOR(S)	
13a. TYPE OF REPORT Final	13b. TIME COVERED FROM _____ TO _____
14. DATE OF REPORT (Year, Month, Day) August 1990	15. PAGE COUNT
16. SUPPLEMENTARY NOTATION Prepared for the U.S. Army Toxic & Hazardous Materials Agency by Roy F. Weston under a contract from, and the supervision of Argonne National Laboratory	

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Roy F. Weston, Inc. has conducted a sampling and analysis program of the Army housing property located in Milford, Connecticut. The objectives of this effort include further characterization of environmental contamination identified in an enhanced preliminary assessment carried out in 1989. The specific activities performed at this site were identification, evaluation of the condition, and collection of samples from specific suspected asbestos-containing materials, including floor tiles, pipe run and pipe fitting insulation, dust in the ductwork, and exterior siding, where present. These evaluations were necessary to clarify potential environmental issues identified in the earlier report, prior to the sale or realignment of the property.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL Joseph Ricci	22b. TELEPHONE (Include Area Code) (301) 671-3461 22c. OFFICE SYMBOL CETHA-BC

DD Form 1473, JUN 86 *Previous editions are obsolete.*

SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED

SAMPLING AND ANALYSIS AT THE U.S. ARMY FAMILY HOUSING UNIT (FHU) PROPERTY MILFORD, CONNECTICUT

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SAMPLING AND ANALYSIS AT THE U.S. ARMY FAMILY HOUSING UNIT (FHU) PROPERTY MILFORD, CONNECTICUT

TABLE OF CONTENTS
(Continued)

LIST OF APPENDICES

EXECUTIVE SUMMARY

The U.S. Army family housing units (FHUs) at Milford, Connecticut were inspected by Roy F. Weston, Inc. (WESTON) personnel during February 1990 to further evaluate the environmental concerns identified in the enhanced Preliminary Assessment reports prepared and submitted earlier by Argonne National Laboratory (ANL) for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). Three of the 16 single-family "Capehart" housing units were examined on 12 February to investigate the possible presence of asbestos-containing materials (ACM). Two underground storage tank (UST) locations were investigated to determine if fuel oil has been released into the environment.

The ANL Draft *Sampling and Analysis* Plan, Revision 1 (SAP) specified identification and sampling the following materials, that frequently are suspected to contain asbestos from ten per cent of the housing units or a minimum of three (whichever is greater).

- Pipe run insulation.
- Dust accumulated inside heating ductwork within the concrete slab, where present and open.
- Vinyl floor tiles.

The WESTON personnel selected three housing units for inspection after review of maintenance records and drawings, discussions with housing management personnel, and determination that all the units were all in similar condition. Based on this assessment, the housing units chosen, Nos. 001, 002, and 015, were considered to be representative of the other 13 units.

Twelve samples of floor tile and vinyl sheeting were collected by WESTON and analyzed. These analyses revealed that asbestos is present in vinyl floor tile and vinyl sheeting at the three housing units examined. Asbestos was quantified at 1% by polarized light microscopy (PLM) in three of the floor tile samples and was qualitatively identified in four other samples by transmission electron microscopy (TEM). No samples of pipe insulation were collected since the pipes in the units examined were not insulated. Dust samples were not collected because all floor vents had been permanently sealed. During the asbestos sampling activity, other suspect materials observed were roof shingles and felt.

The following practices should be observed with regard to the known and suspected asbestos-containing materials identified:

- The vinyl floor coverings pose no significant risk as long as they are in good condition and are not damaged by excessive wear or misuse. They should be managed in place under an Operations and Maintenance (O&M) program which describes procedures for the regular inspection of the floor coverings and the removal and replacement of any that become damaged.
- Other suspect materials identified but not sampled, including roofing materials, should be assumed to contain asbestos and managed in place under an O&M program until they are either removed or determined to contain no asbestos.

The USTs were located and sampling was attempted in accordance with the ANL SAP. However, the locations of both USTs could not be determined with precision since no fill or vent pipes were visible and no site maps were available. The area where the tanks were thought to have been exhibited evidence of subsidence, indicating that the tank may have collapsed or been removed.

Three exploratory soil borings were made at Unit 16 at the locations recommended in the SAP. Only two borings were made at Unit 10, due to restricted access and because the presumed tank location was covered by standing water. Only two soil samples were collected for laboratory analysis from these borings, since shallow bedrock prevented drilling to full planned depth. Field screening of the core samples from Unit 16 indicated that based on the presumed tank location, no hydrocarbons were present in excess of the background readings in the soils. The total petroleum hydrocarbon (TPH) concentration in the sample of soil 13-CT-16-SST-02-04 at the 7.3 to 8.4 foot interval was determined to be 190 mg/kg.

Based on the strata encountered during the soil explorations, it appears that portions of the Milford site are underlain by bedrock at a shallow depth. The USTs appears to be or have been situated in an area where depression in the soil surface was observed. The TPH levels found in the soil samples from the tank areas indicate that some contamination has occurred in the area of the UST at Unit 16 due to spills or leaks in the tank. Due to a large area of standing water, shallow bedrock, and surface obstacles, completion of the planned sampling program at the Unit 10 UST was not possible within the time frame of this assignment. No significant contamination was found in the two samples collected, but the standing water precluded investigations in the area most likely to contain contamination.

WESTON recommends that USTs at the locations sampled be removed in accordance with applicable state and Federal regulations if they still remain in place. Since the soils surrounding the tank at Unit 16 appear to contain TPH levels that will require action, this remediation should be done at the time that the tanks are removed or the sites excavated to confirm prior removal. The extent of the soil contamination cannot be determined, due to the limited nature of this assessment. However, it is our experience that remediation of soil contamination caused by small tanks such as this one can be performed effectively at the time of tank removal.

SECTION 1. INTRODUCTION

SAMPLING AND ANALYSIS AT THE U.S. ARMY FAMILY HOUSING UNIT (FHU) PROPERTY MILFORD, CONNECTICUT

SECTION 1. INTRODUCTION

Roy F. Weston, Inc. (WESTON) was retained by Argonne National Laboratory (ANL) to provide assistance in gathering additional environmental data for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) at 53 family housing unit properties (FHUs) in 12 states. The Milford, Connecticut property is one of these FHUs.

1.1 PURPOSE AND SCOPE

The purpose of this project was to provide the Department of the Army with sound environmental data on the properties which are scheduled for sale or realignment as a result of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526). Environmental assessments of each property covered by the Act are required by the Secretary of Defense prior to their closure or realignment. Such actions must be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA) and to ensure that any environmental hazards will be identified and mitigated where required.

Previously, ANL conducted enhanced preliminary assessments (PAs) for each property. These enhanced PAs made recommendations regarding sampling and analysis to determine (1) whether and in what quantities asbestos is present in certain building construction materials (including pipe run insulation, dust accumulated in heating ductwork, vinyl floor tile, and exterior siding shingles, where present), (2) in selected contexts, whether and in what concentration soils and groundwater may be contaminated by leaks from underground storage tanks (USTs), and (3) whether and in what range transformer oils at selected sites may contain polychlorinated biphenyls (PCBs). WESTON gathered this data by implementing Argonne National Laboratory's (ANL's) Draft FHU Sampling and Analysis Plan, Revision 1 (SAP).

1.2 SITE DESCRIPTION

The Department of the Army's FHU property in Milford, Connecticut consists of 16 single-family units located on 4.0 acres, situated along Alpha Lane. The areas surrounding this FHU property are residential properties to the south and east and woodlands to the north and west.

The units at this FHU property are three-bedroom, single-family dwellings built in 1958 in the "Capehart" style. The single-story, wood-frame units were constructed on concrete slab foundations with no basements or crawl spaces. The ducts for the original heating system are embedded in the concrete slab, which was covered with vinyl floor tile and vinyl sheeting. The units have pitched roofs surfaced with asphalt shingles and exteriors finished with vinyl siding.

1.3 REPORT ORGANIZATION

This report contains the results of the sampling and analysis program performed by WESTON. Section 2 contains a description of the asbestos sampling performed at the property and laboratory results for samples of suspected asbestos-containing material (ACM) collected. Copies of field notes and laboratory results pertaining to asbestos are provided in Appendices A.1 and A.2. Section 3 contains a description of the underground storage tank (UST) sampling activities and lab analyses. Copies of field data and laboratory reports for the UST investigations are included in Appendices B.1 and B.2, respectively. Section 4 is a summation of findings for the site.

SECTION 2. ASBESTOS-CONTAINING MATERIALS

SECTION 2. ASBESTOS-CONTAINING MATERIALS

WESTON personnel inspected three of the 16 "Capehart" units at the Milford family housing facility on 12 February 1990 for the presence of suspected ACM. Floor tile and vinyl sheeting were the only suspect materials found within the buildings that were sampled. All sampling was done following the requirements of ANL's SAP. Additionally, all field work was performed in accordance with applicable Federal regulations, including 40 CFR Part 61 subpart M, 40 CFR Part 763 subpart E, and 29 CFR Part 1910.1001.

2.1 SAMPLING RATIONALE

The sampling rationale used by WESTON for this project followed the recommendations set forth by ANL. The type of suspect ACM to be sampled, the number of housing units to be examined at each FHU facility, and number of samples to be taken for each material found were described in the SAP. The plan for Milford required sampling of the following materials, if present:

- Pipe run insulation.
- Accumulated dust inside heating ductwork if not sealed.
- Vinyl floor tiles.

In accordance with the SAP, three units were examined at this facility. The sampling plan, however, did not identify specific units which were to be sampled. The task of determining which housing units were representative of the facility as a whole and, therefore, would be sampled was left to the WESTON field team. After reviewing all available maintenance records and drawings and discussing the facility with Directorate of Engineering and Housing (DEH) personnel, it was determined that all of the units at the Milford FHU were similar in condition. Units 001, 002, and 015 were chosen by the WESTON field team leader as representative units to be sampled.

The SAP specifies that a minimum of two pipe run insulation samples, four dust samples, and one sample of each color of floor tile be collected from each of the housing units examined. Twelve samples of vinyl floor tile and sheeting were collected at the facility. No pipe insulation samples were collected since the pipes in the units examined were not insulated. Dust samples were not collected because all floor vents had been permanently sealed. Documentation of the sealed vents was provided by the Army and is included in Appendix A.1.

2.2 FIELD ACTIVITIES AND OBSERVATIONS

Each of the units was inspected to determine if suspect materials were present and collect samples of those materials found. Suspect floor coverings were the only targeted materials present in units at this facility.

Three colors, beige, white, and tan, of 9" x 9" vinyl floor tile, one color, brown, of 12" x 12" vinyl floor tile and one color, brown, vinyl sheeting were sampled. All three units contained brown floor tile, white floor tile, and brown vinyl sheeting. Units 002 and 015 contained both tan and white floor tile, and Unit 01 contained beige floor tile. One sample was taken of each of the floor tiles and vinyl sheeting types found in each housing unit, resulting in a total of 12 samples for laboratory determination of asbestos content.

These samples were collected by breaking off a small piece of floor covering in an inconspicuous location. About one square inch of the tile surface area was taken for each sample. No effort was made to separate the mastic, which sometimes contains asbestos, from the floor tile samples themselves.

The vinyl floor coverings in all three of the units inspected was in good condition. This material is considered to be a non-friable type of ACM, unless damaged. If significant damage occurs, such that the material becomes friable as defined in the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), the U.S. Environmental Protection Agency (EPA) would classify these tiles as friable materials. However, an EPA opinion was recently released that changes certain previous interpretations regarding non-friable ACM. On 23 February 1990, a memorandum was issued by the Director of Emissions Standards Division, the Director of Stationary Source Compliance Division, and the Associate Enforcement Counsel for Air Enforcement of the EPA Office of Air Quality Planning and Standards (OAQPS). This memorandum was circulated to other air quality officials and EPA regional offices in early March 1990. This latest position states that floor tiles and certain other non-friable materials do not have to be removed from a facility prior to demolition, unless they are severely damaged and thus are considered friable, or unless the demolition may cause fiber release through grinding or abrasion of the tiles. Floor tile removal shall be done if demolition is to be accomplished by burning, either of the unit or of the debris from demolition. However, if the floors in the housing units are to be renovated, special care must be taken during the process to prevent the release of asbestos fibers.

The WESTON field team was directed, as a part of the project scope contained in the SAP, to perform sampling and analysis of specific suspect ACM. Other suspect materials observed were roof shingles and felt. Copies of the field notes are included in Appendix A.1.

2.3 LABORATORY PROCEDURES AND RESULTS

The bulk samples of building materials were analyzed for asbestos content by WESTON's optical microscopy laboratory in Auburn, Alabama. This laboratory is accredited by the American Industrial Hygiene Association (AIHA) and the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The bulk samples were analyzed by Polarized Light Microscopy (PLM) using the EPA's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA 600/M4-82-020, December 1982. Copies of the laboratory reports are included in Appendix A.2.

Floor tile and vinyl sheeting samples for which no asbestos was found using PLM methods were analyzed qualitatively for the presence of asbestos by Transmission Electron Microscopy (TEM) at WESTON's NVLAP accredited electron microscopy laboratory in Auburn, Alabama. Copies of these laboratory reports are also included in Appendix A.2.

All analyses were performed in accordance with protocols set forth in the Laboratory Accreditation package submitted by WESTON under NVLAP. This document includes standard procedures for sample analysis and quality assurance / quality control (QA/QC) which were acceptable to NIST. The QA/QC protocols for the laboratory differ significantly from those commonly found in chemical analysis procedures, due to the nature of the analytical procedure. Since there are no reagents, digestions, or other steps in the process that provide significant opportunities for sample contamination or analyte loss, lot blanks and sample spikes are not performed. Instead, all analyses are performed using the following steps:

- Incoming samples are divided into lots of ten for analysis.
- One sample is selected at random to serve as the QC check and divided into two containers.
- The sample lot is assigned to an analyst who determines the asbestos content of each sample.
- The QC sample is analyzed by a different analyst, designated by the sample custodian.
- The results of both analysts are submitted to the QC Coordinator for review, and comparison to the laboratory QC chart.
- The results are reviewed and approved, based on the written QC review procedures, or rejected. If rejected, the sample lot and QC sample are reanalyzed.

The WESTON laboratory routinely runs blank checks to ensure that equipment and refractive index oils are not contaminated, collects and analyzes samples of the air in the work areas to document that airborne asbestos fibers do not threaten worker health contaminate samples, and analyzes samples submitted by NIST to document precision of results as requir oy the NVLAP program. Samples provided in past rounds of proficiency checks are used for analyst training and to document analyst proficiency. The use of third party laboratory comparisons is often done, and is accomplished by sending duplicates of samples to an outside laboratory and comparing the results obtained by the two facilities.

In interpreting the asbestos results, it should be noted that the definition of asbestos presence differs between the EPA and some state agencies. According to the EPA definition, any materials that contain greater than one per cent (>1%) asbestos are classified as ACM by the 1977 NESHAP regulations. However, California has recently implemented state regulations that consider all materials containing 0.1 per cent (%) or more asbestos as asbestos-containing. It is believed that several other states will soon follow the lead of California in lowering the threshold limit to 0.1 per cent, including some in which properties under review in this study are located. Currently, the State of Connecticut continues to abide by the EPA definition, hence, all samples containing >1% asbestos are considered to be ACM.

The matter is further complicated by the fact that the PLM method was developed specifically for friable materials, but not for non-friable types of suspect ACM such as vinyl floor tiles, vinyl sheeting, and siding. In fact, no specific method has been developed and promulgated to date for such samples, so laboratories use PLM as the only available documented procedure for their analysis. PLM has an inherent limitation on fiber resolution of about 0.25 micrometer (um) in diameter and reliable detection and quantification of fibers smaller than 1 um in diameter is difficult. The manufacturing process for vinyl floor tiles, for example, results in the very small fiber diameters which ofte cannot be seen by PLM. WESTON's experience is that frequently such samples do, in fact, contain significant quantities of asbestos. WESTON has developed a qualitative technique using TEM to detect the presence of such small fibers therefore to minimize false negatives in the laboratory results. This technique, however, does not allow a good quantitative estimate of asbestos content.

For these reasons, the WESTON laboratories have implemented a policy of reporting asbestos presence as follows:

- Asbestos determined by PLM to be present at greater than 1% is reported as the quantity detected.
- If asbestos is estimated to be less than 1% by PLM, it is reported as <1%. This estimated asbestos content is often used when only one asbestos structure is observed.
- If asbestos is not detected in certain non-friable materials by PLM, then the samples are subjected to TEM analysis. The results are reported as positive if asbestos is detected by TEM.

Recommendations made in this report are based on the >1% regulatory limit, except for floor tiles as discussed earlier and except as otherwise noted. However, all samples in which asbestos was detected are discussed. This represents a conservative approach to the assessment of asbestos presence at the facility.

Table 2.1 contains a summary of all samples collected at the Milford FHU, including sample locations, material descriptions, and laboratory results. PLM results are quantitative while TEM results are qualitative only. Quantity estimates for materials sampled that were suspected to contain asbestos are presented in Table 2.2. The field notes describing the observations are provided in Appendix A.1, while copies of the original laboratory reports are included as Appendix A.2.

Three of the floor tile samples were found by PLM to contain asbestos at 1%. WESTON considers the 1% value reported for Samples AP-555-13-CT-001-AFT, AP-556-13-CT-002-AFT, and AP-561-13-CT-002-AFT to be sufficient to define the samples as asbestos-containing due to the analytical uncertainty of the PLM method when applied to floor tiles, as previously described. Four samples for which no asbestos was reported following PLM analysis were found to contain asbestos fibers by the TEM procedure. While this result is qualitative in nature, consideration of the process through which floor tiles were manufactured leads to the conclusion that this material should be treated as ACM. No asbestos was found in five samples by both PLM and TEM. Thus, seven of the 12 floor tile and vinyl sheeting samples were found to contain asbestos. The 13 units not inspected should be considered to have ACM present in the floor coverings unless additional sampling and analysis is performed and shows that no asbestos is present in these units.

2.4 CONCLUSIONS AND RECOMMENDATIONS

The sample analyses performed by WESTON have revealed that asbestos is present in the floor tile and vinyl sheeting in the three housing units examined. These units are thought to be representative of the other 13 at the site, but this was not confirmed by sampling all the units.

The vinyl floor coverings in the three housing units inspected were in good condition, but, should they become broken or damaged, asbestos fibers may be released. The recent EPA clarification of the definition for damaged non-friable materials apparently removes some concerns about the status of these materials at the time of renovation or demolition. Inspection of these normally non-friable materials prior to demolition is required, but, if they are in good condition at the time, they may be left in place as long as planned demolition procedures will not release a significant amount of asbestos fibers. However, if demolition will subject these non-friable materials to grinding, sanding, or abrading, or if demolition involves burning of the structure or debris from the structure, all forms of ACM, including these floor tiles, must be removed in advance.

TABLE 2.1
BULK SAMPLE SUMMARY
MILFORD FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	ASBESTOS CONTENT PLM ANALYSIS	CONFIRMATION TEM ANALYSIS
Unit 001				
AP553-13-CT-001-AFT	Brown sheet vinyl	Bath	None Detected	Negative
AP554-13-CT-001-AFT	Brown 12" x 12" floor tile	Kitchen	None Detected	Positive
AP555-13-CT-001-AFT	Beige 9" x 9" floor tile	All rooms except kitchen	Chrysotile, 1%	
AV028-13-CT-001-AFT	White 9" x 9" floor tile	Over floor vents	None Detected	Negative
Unit 015				
AP556-13-CT-015-AFT	Tan 9" x 9" floor tile	All rooms except kitchen	Chrysotile, 1%	
AP557-13-CT-015-AFT	White 9" x 9" floor tile	Over floor vents	None Detected	Positive
AP558-13-CT-015-AFT	Brown 12" x 12" floor tile	Kitchen	None Detected	Negative
AP559-13-CT-015-AFT	Brown sheet vinyl	Bath	None Detected	Positive
Unit 002				
AP560-13-CT-002-AFT	Brown 12" x 12" floor tile	Kitchen	None Detected	Negative
AP561-13-CT-002-AFT	White 9" x 9" floor tile	Over floor vents	Chrysotile, 1%	
AP562-13-CT-002-AFT	Tan 9" x 9" floor tile	All rooms except kitchen	None Detected	Negative
AP563-13-CT-002-AFT	Brown sheet vinyl	Bath	None Detected	Positive

TABLE 2.2
ASBESTOS CONTAINING MATERIALS
MILFORD FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	QUANTITY	UNITS
Unit 001				
AP554-13-CT-001-AFT	Brown 12" x 12" floor tile	Kitchen	75	Square ft
AP555-13-CT-001-AFT	Beige 9" x 9" floor tile	All rooms except kitchen	780	Square ft
Unit 015				
AP556-13-CT-015-AFT	Tan 9" x 9" floor tile	All rooms except kitchen	780	Square ft
AP557-13-CT-015-AFT	White 9" x 9" floor tile	Over floor vents	15	Square ft
AP559-13-CT-015-AFT	Brown sheet vinyl	Bath	20	Square ft
Unit 002				
AP561-13-CT-002-AFT	White 9" x 9" floor tile	Over floor vents	15	Square ft
AP563-13-CT-002-AFT	Brown sheet vinyl	Bath	20	Square ft

The vinyl floor coverings should be left in place and managed under an Operations and Maintenance (O&M) program. An O&M program must address the following:

- The locations of all known and suspected ACM.
- The procedures and frequency for periodically assessing the ACM in the facility.
- The procedures for safely handling the ACM during maintenance or removal activities.
- Designation of an asbestos coordinator for the facility.
- The responsibilities and requirements for training of personnel involved with maintenance and renovation of the facility.
- The record-keeping program for the facility.

The floor coverings should be removed during a planned renovation of the units, in accordance with the regulations applicable at the time.

Other suspect materials noted were roof shingles and felt, which should be managed under an O&M program. Care should be taken during renovations or demolition to identify suspect materials that may have been hidden from the view of the assessment team. The suspect materials observed by the field team, and any hidden suspect materials found later, should be analyzed for the presence of asbestos prior to being disturbed.

SECTION 3. UNDERGROUND STORAGE TANKS

SECTION 3. UNDERGROUND STORAGE TANKS

WESTON personnel conducted a site visit at the Milford, Connecticut Family Housing Unit (FHU) on 20 February 1990, accompanied by Mr. Al Yagovane, the DEH representative. One purpose of the inspection was to locate two buried USTs which were documented in the ANL SAP. Prior to drilling at the site, WESTON contacted the local utilities "Call Before You Dig" hotline, to determine the location of any buried utilities such as telephone and electrical cables or water supply and sewer lines, verify that they would not be affected by the planned activities, and obtain any clearances necessary prior to commencement of drilling activities. The USTs, once used for storage of heating oil, were identified as potential areas of petroleum hydrocarbon contamination.

The primary objective of the SAP was to provide additional information on the Milford site, supplementing that presented in the Enhanced PA conducted by ANL for USATHAMA. A selective soil sampling and analytical evaluation was performed in accordance with the SAP to determine if petroleum hydrocarbon contaminants are present in the specific areas of concern. The SAP was not designed nor intended to characterize the movement, concentration, or extent of contamination at the site.

3.1 SAMPLING RATIONALE

The rationale for sampling the USTs at the Milford, Connecticut site was identified by ANL in the draft FHU SAP. The soil sampling activities were concentrated in the vicinity of two USTs that were presumed to be located in the backyards of Housing Units Nos. 10 and 16. The tanks had been used for the storage of home heating oil. Tanks at Housing Units No. 10 and 16 may have leaked, based on the findings reported in the Enhanced PA.

During the reconnaissance, the precise location of the USTs could not be accurately determined. Both USTs appear to have been situated in backyards approximately ten feet from the rear of the house. Mr. Yagovane stated that he attempted to procure blueprints of the site from the Engineering Group in order to more accurately locate the USTs, but none were available. He also reported that the USTs had been "closed in place," by removing their contents and filling them with a sandy material in conformance with State and Federal requirements.

Several "exploratory" hand auger borings were drilled at locations where the UST at Unit 16 was thought to be in an unsuccessful attempt to locate the top of the UST. The field team decided that the tank was probably located or had been at the place where a shallow depression could be observed. Mr. Yagovane identified a "very close approximation" of the location or former location of the UST at Unit No. 10. This suspected location was situated in a water filled depression measuring approximately one foot deep and ten to 15 feet in diameter.

Three soil borings were to be drilled on each of the three sides of the USTs away from the housing unit wall is based on the specifications presented in the SAP. Each of these borings was to be located at a distance from the center of the UST equal to the estimated UST length. Soil samples were to be collected each of these borings at depths of 2.0-3.5 feet, 5.0-6.5 feet, 8.0-9.5 feet and at a depth equivalent to 3 feet below the UST bottom. If stratified sediments were encountered during drilling, sampling was to be conducted within each of the respective soil horizons. All of these planned activities were not successfully completed, due to site conditions and geological formations.

3.2 SAMPLING METHODOLOGY AND OBSERVATIONS

A WESTON field geologist conducted the drilling and collected the soil samples. Each boring was advanced from the ground surface using a hand auger and the soil samples were recovered using a two-inch diameter, 18-inch long split spoon sampler. The split spoon sampler was driven, using a weight and tripod system, at the bottom of the open borehole and penetrated the maximum of 1-1/2 foot per sample.

The WESTON geologist described each soil sample, noting the texture, consistency, color, moisture content and the presence of any visible staining or odor. Table 3.1 is a summary of these observations. The samples were also screened for the presence of organic vapors using an HNu brand photo-ionization detector (PID). After these examinations each soil sample was removed from the split spoon sampler and apportioned into two 125 milliliter glass sample containers and closed with the screw-on lid. The containers were labeled with the standard USATHAMA sample identification number, date, and analyte. Each lid was secured with a custody seal, and the sample was placed on ice in an insulated cooler.

Each split-spoon sampler was decontaminated prior to usage and between each sample using an Alconox® and water solution followed by a rinse with distilled water. Upon completion of sampling, each borehole was backfilled with its cuttings and the area was restored to its original condition.

Because the location of the UST at the Unit No. 10 could not be accurately identified, two soil borings were drilled in the vicinity to the water-filled depression at optimal locations based on the typical UST placement at other housing units, as shown in Figure 3.1. Drilling and sampling activities at these locations were monitored by an ANL observer, Mr. Brad Bailey. Access to other nearby areas was restricted by surface water, trees, walkway and an aboveground tank. Therefore, with the concurrence of Mr. Bailey, a third soil boring was not drilled at this location. Sampling depths were determined largely by ability to penetrate the materials with the hand auger and soil sample recovery in the sampling device. In general, sampling in the borehole was conducted continuously to the point of refusal, that is, the inability to further advance the borehole. At Unit No. 10, sample recovery was poor in the weathered bedrock, while refusal occurred when competent bedrock (schists) was encountered at 4.0 feet. One sample was recovered from each boring for laboratory analysis.

At Unit No. 16, five soil borings were drilled and samples were collected from three borings, SB-02, SB-04, and SB-05, for laboratory analyses. As described in Table 3.1, the soils encountered in each boring at the site were composed of silty fine to coarse grained sand with some coarser fractions of gravel or rock fragments. No HNu organic vapor readings were observed above background levels and no obvious oil staining, discoloration or odor within the soils were noted. Nine samples were submitted to the laboratory for analysis. Only one of these was from SB-04, where refusal occurred at 3.5 feet.

3.3 LABORATORY PROCEDURES AND RESULTS

The 11 soil samples were analyzed for total petroleum hydrocarbons (TPH) by the WESTON Analytical Laboratory, located in Lionville, Pennsylvania. EPA Standard Method 9071 from SW-846 was used for solvent extraction of the fuel oil residuals from the soil matrix. The extract containing any hydrocarbons was then analyzed by infrared techniques found in EPA Method 418.1 (USEPA 600/4-79-020) for determination of oil and grease.

TABLE 3.1. SUMMARY OF SOIL BORINGS
HOUSING UNIT NO. 16

SAMPLE I.D.	DEPTH (ft.)	GENERAL SOILS DESCRIPTION
13-CT-16-SST-02-01 13-CT-16-SST-02-03 13-CT-16-SST-02-03 13-CT-16-SST-02-04	2.0 - 3.5 3.5 - 5.4 5.5 - 7.3 7.3 - 8.4	Silty fine to course sand, some medium to coarse gravel and Rock fragments, Subrounded to angular, olive to reddish brown moist, relatively uniform throughout boring 2.0 - 8.4 ft.
13-CT-16-SST-04-01	1.5 - 2.8	Silty fine to coarse sand, some gravel and rock fragments, olive to
13-CT-16-SST-04-02 (Not sampled)		moist. Refusal at 3.5; (Blow count 50/3")
13-CT-16-SST-05-01	2.0 - 2.5	Silty fine to coarse sand, little gravel and rock fragments, damp.
13-CT-16-SST-05-02	2.5 - 4.3	Same as above.
13-CT-16-SST-05-03	4.3 - 6.1	Same as above.
13-CT-16-SST-05-04	6.1 - 8.0	Same as above with some Quartzite fragments in bottom of spoon, wet at 7.5 ft.
	HOUSING UNIT NO. 10	
13-CT-10-SST-01-01	2.3 - 4.1	Silty, fine to coarse sand, some rock fragments grading to clayey sand Dark brown with orange mottling, dense, damp, refusal at 4.1 ft. (Blow count 54/6").
13-CT-10-SST-02-01	1.5 - 3.5	Same as above.
13-CT-10-SST-02-02	3.5 - 3.8	Refusal at 3.8 ft (Blow count 50/3 ").

Note: Sample Identification Key

13 - Site name (Milford) SST - Soil, Storage Tank
CT - Connecticut 02-01 - Soil boring, Soil Sample Number
16 - Housing Unit

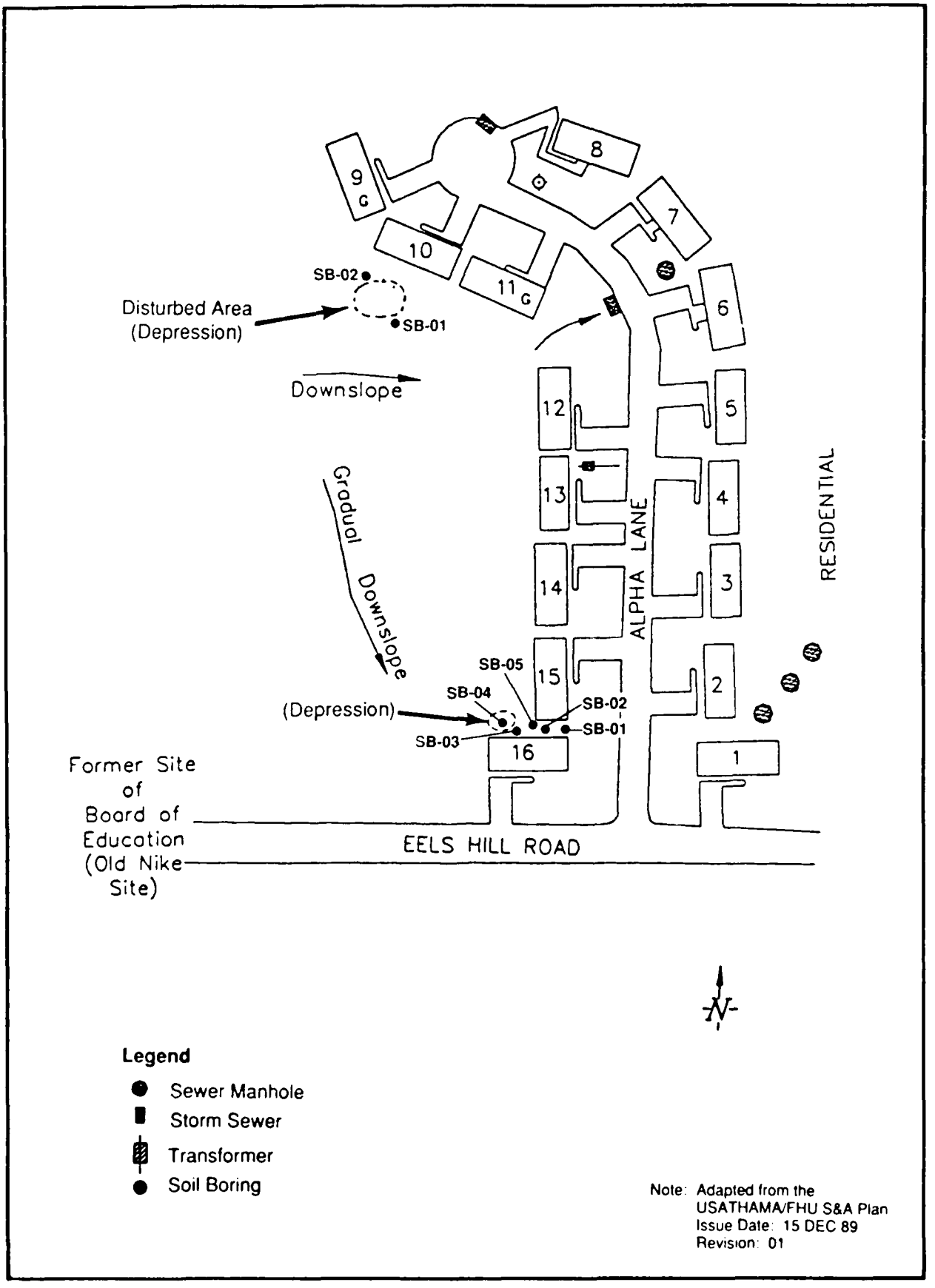


FIGURE 3.1. SITE PLAN OF FAMILY HOUSING, MILFORD, CT

TABLE 3.2. SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES
HOUSING UNIT NO. 16

SAMPLE I.D.	DEPTH	PETROLEUM HYDROCARBONS (mg/kg)
13-CT-16-SST-02-01	2.0 - 3.5	14
13-CT-16-SST-02-03	3.5 - 5.4	15
13-CT-16-SST-02-03	5.5 - 7.3	33
13-CT-16-SST-02-04	7.3 - 8.4	190
13-CT-16-SST-04-01	1.5 - 2.8	8.6
13-CT-16-SST-04-02 (Not sampled)		--
13-CT-16-SST-05-01	2.0 - 2.5	3.8 J*
13-CT-16-SST-05-02	2.5 - 4.3	6.7
13-CT-16-SST-05-03	4.3 - 6.1	3.0 J
13-CT-16-SST-05-04	6.1 - 8.0	9.3
HOUSING UNIT NO. 10		
13-CT-10-SST-01-01	2.3 - 4.1	6.6
13-CT-10-SST-02-01	1.5 - 3.5	--
13-CT-10-SST-02-02	3.5 - 3.8	13

Note: Sample Identification Key

13 - Site name (Milford)	SST - Soil, Storage Tank
CT - Connecticut	02-01 - Soil boring, Soil Sample Number
16 - Housing Unit	

* J represents an estimated concentration value that is present below the quantitation limit.

The concentrations of petroleum hydrocarbons, presented in Table 3.2 were tabulated from the analytical reports received from the laboratory. Petroleum hydrocarbon concentrations determined in samples from Unit 16 ranged from below the limit of quantitation of 3.0 mg/kg in Sample 13-CT-16-SST-05-03 to 190 mg/kg detected in Sample 13-CT-16-SST-02-04. The concentration appears to increase steadily with depth of the boring. The highest level was from the 7.3 to 8.4 foot sample. The samples from the borings at Unit 10 were of near-surface soils only, due to refusal encountered in the drilling activity. These samples had low levels of contamination, similar to those encountered for comparable samples taken at the Unit 16 location. Poor sample recovery and refusal precluded the collection of additional samples from borings at Unit 10.

3.4 CONCLUSIONS AND RECOMMENDATIONS

The findings presented below are based upon information gathered by WESTON during the investigation of the USTs including, but not limited to, analytical results for soil samples and interviews with the DEH representative and others. The USTs under study were "permanently closed" in place by emptying them of their contents and filling them with a sandy soil mixture. While these tanks are not regulated under the Federal UST regulations, these procedures generally conform with the Code of Federal Regulation, 40 CFR Part 280.71 UST, Technical Requirements for permanent closure.

A moderate amount of petroleum contamination was found in soil at the tank locations. Contamination by TPH was found in the deepest sample from SB-02 at Unit 16 at a concentration of 190 mg/kg. This contamination may be related to the former UST that was located near this soil boring.

The soil borings performed at Unit 10 site may have been drilled at locations farther from the UST than called for by the SAP, due to the lack of information on tank placement at this site. The depth of penetration at these locations was limited by refusal at the bedrock. The laboratory results do not seem to indicate a problem at Unit 10, but the concentrations found correspond to those at comparable depths at Unit 16. Therefore, contamination of lower strata cannot be ruled out.

Although no specific standards for petroleum hydrocarbon contamination in soils exists in the State of Connecticut, the Department of Environmental Protection (DEP) has established criteria to provide general guidance. According to the DEP Hazardous Materials Management Unit, action levels are established based upon the groundwater standards generally followed by the State Water Enforcement Bureau, Groundwater Section. Action levels call for soil remediation on a site specific basis at contamination levels as low as 100 mg/kg of petroleum hydrocarbons in soils.

For comparison, the New Jersey Department of Environmental Protection and a number of other states (Pennsylvania, New York, and Maryland) have also established similar information "action levels" of 100 mg/kg for petroleum hydrocarbons in soils. Based on the concentration of petroleum hydrocarbons present in the vicinity of the UST at Housing Unit No. 16, further remediation is required. The actual extent of possible soil contamination around the UST cannot be ascertained until the UST is excavated. The following steps should be performed to further investigate and remediate the site.

- Additional soil samples should be collected from at least two locations between Soil Boring SB-05 and the rear of Housing Unit No. 16. Geophysical techniques, such as ground-penetrating radar, may be employed to determine if the tank is still in place, and if so, the actual

location of the tank. In each boring, continuous soil samples should be collected by split spoon methods to a depth of at least ten feet. Soil samples taken from each of these borings should be analyzed for TPH.

- Additional soil samples should be collected in the same manner from the approximate location of the UST at Unit No. 10.

If these studies show that soil remediation is necessary in this area, due to the presence of petroleum hydrocarbons in the soil at levels in excess of 100 mg/kg, the following activities should be undertaken:

- Determine if the UST is in place and if it contains residual liquids or solids, prior to excavation, and, if present, pump out and dispose of any remaining materials.

- Excavate and remove the USTs, if present, segregating any obviously contaminated soils encountered during excavation.

- Inspect the open excavation, and excavate to the water table any visibly contaminated soil or soil exhibiting high organic vapor readings on field instruments. Such soil should be temporarily stored for subsequent disposal in a secure landfill. If extensive soil contamination or free product is found around the UST, the use of alternate remediation procedures should be evaluated, based on the quantity and extent of contamination.

- Analyze the underlying soils for metals and flammability to sufficiently characterize the soils and aid in the selection of an appropriate disposal facility. Sample soils at the boundaries of the excavation, and analyze for total petroleum hydrocarbons to comply with applicable State and Federal regulations.

- Pump the ground water, if a layer of fuel oil is discovered floating on the water during UST removal, to an oil/water separator for recovery of any remaining free organics and to pretreat the water in preparation for disposal.

SECTION 4. SUMMARY OF FINDINGS

SECTION 4. SUMMARY OF FINDINGS

Vinyl floor tile and vinyl sheeting were the only suspect materials sampled during the visual examination of three of the 16 units at the Milford facility. Several different types and colors of vinyl floor tile and vinyl sheeting were observed during the examination and all were generally in good condition. No pipe insulation was observed during the examination. The heating system floor vents had been permanently sealed and no samples of dust within the heating ductwork was collected. The exterior of each of the units examined was covered with aluminum siding.

Analytical results indicated that several types of vinyl floor tile contain asbestos. Five of the nine vinyl floor tile samples contain asbestos, although the asbestos in two types of vinyl floor tile could not be detected by PLM, as discussed previously, but was detected by TEM analysis. Two of the three vinyl sheeting samples were found to contain asbestos by TEM analysis. The five samples were found to contain no asbestos by both PLM and TEM analysis. Other suspect materials noted were roofing materials.

The asbestos-containing floor tiles and other suspect materials do not require immediate action, since they are in good condition. However, their condition must be monitored and remedial action implemented in the event that they deteriorate or are damaged. They may have to be removed prior to demolition or renovation of the facilities. An O&M program should be developed and implemented if ACM is left in place in the units, to aid in the proper management of this remaining material until its ultimate removal.

The locations of the USTs could not be precisely determined, based on surficial evidence, but boring placed at points selected, based on approximate locations, indicated contamination of soils by petroleum hydrocarbons at the eight-foot level, the deepest sample collected, at Unit No. 16. The area at Unit No. 10 appears to have a bedrock outcropping that was encountered at about the four foot depth. Based on the evidence gathered to date, additional studies should be performed to determine:

- If the USTs remain in place or have been removed.
- If the contamination found is significant and pervasive.
- If further remedial action is necessary.

APPENDIX A.1. FIELD DATA

0185

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01

FACILITY/BLDG. NO. MILFORD CT, 1 ALPHA ST.

FACILITY CONTACT JOE NADEAH TELEPHONE NUMBER (203) 468-6934

TECHNICIAN NAME ROBERT LYNCH SIGNATURE Robert Lynch

TECHNICIAN NAME Jim Allen SIGNATURE Jim Allen

TIME ARRIVED 0815 TIME DEPARTED 0830 DATE 12 Feb /90
dd mmm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

This is a one story capehart style home. ~~It has~~ It has 3 bedrooms. There are 3 ~~two~~ types of floor tile present. The old air vents have been sealed. There is no pipe insulation. The exterior of the home is covered with white aluminum siding. The roof has asphalt shingles and felt. There is sheet vinyl in the bath.

All of the homes are identical. This was a random choice of all the homes. The decision was also based upon available drawings.

ACTIVITY CHECKLIST

Interviews Completed	✓	Number of Samples	4
Drawings Reviewed	✓	Survey Form Completed	✓
Drawings Attached	✓	Site Log Completed	✓
Visual Inspection	✓	Chain-of-Custody Initiated	✓
Number of Photos	0	Exp. Assess. Form Init.	✓

Q.A. Check _____ SIGNATURE _____ DATE / /90
dd mmm yy

WESTON

SITE SURVEY LOG

(Continued)

maintenance records, discussions with housing management personnel.

ASBESTOS SURVEY DATA

0187

BLDG. NO.: 6011
INSTALLATION 0113

TASK TEAM MEMBERS
ROBERT LYNCH
STAN ANDERSON

W.O. No. 2104-13-01
CLIENT: ARGONNE NATIONAL LAB

BLDG. NAME: MILFORD FAMILY HSG
BLDG. DESCRIPTION: CAPEHART

DATE (dd/mm/yy): 12/02/90
TIME ARRIVED: 0815

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
1.	AP553	13	CT	001	AFF	BATH	20		0999A	01
2.	AP554	13	CT	001	AFF	KITCHEN	75		0999B	02
3.	AP555	13	CT	001	AFF	ALL RMS EXCEPT KIT	760		0999C	03
4.	AP556 V328 AV028	13	CT	001	AFF	OVER VENTS/PATCH	15		0999D	04
5.					A					
6.					A					
7.					A					
8.					A					
9.					A					
10.					A					
11.					A					
12.					A					

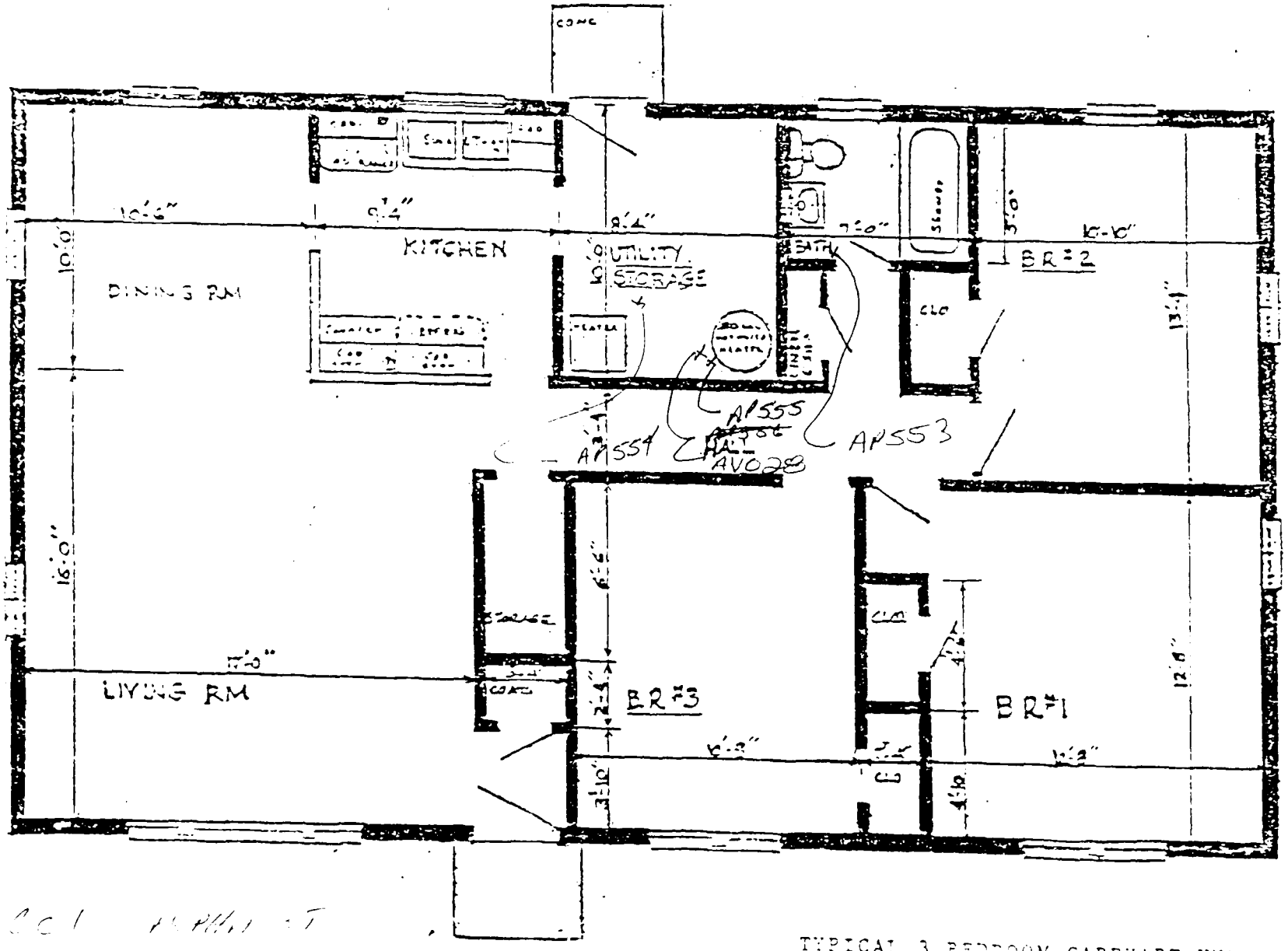
NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	brown sheet vinyl in bath only.
02	12x12 brown floor tile in kitchen only.
03	9x9 beige floor tile in all rms except kitchen and bath
04	9x9 white floor tile, over old floor vents and tie patch areas.
	* all of the materials found are non friable

TECHNICIAN SIGNATURE Robert Lynch

QUALITY ASSURANCE SIGNATURE

ATCAP09?

ROY F. WESTON, INC.



CAPEHART TYPE "A"

TYPICAL 3 BEDROOM CAPEHART UNIT
LOCATED IN ANSONIA, FAIRFIELD,
SHELTON, ORANGE, NEW BRITAIN, CT.

0189

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01

FACILITY/BLDG. NO. MILFORD CT, 15 ALPHA ST

FACILITY CONTACT JEE NADEAH TELEPHONE NUMBER (203) 466-6934

TECHNICIAN NAME ROBERT LYNCH SIGNATURE Robert Lynch

TECHNICIAN NAME [illegible] SIGNATURE [illegible]

TIME ARRIVED 0830 TIME DEPARTED 0845 DATE 12 Feb 90
dd mmm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

This is a one story three bedroom Capehart style home. The outside has yellow aluminum siding. The roofing shingles and felt is suspect. There are 3 types of floor ~~tile~~ tile and one type of sheet vinyl present. The old floor tests have been sealed. There is no pipe insulation present

The ~~the~~ decission to survey this home was based upon available drawings, maintenance records, discussion with housing management personnel. It was found that all of the homes were identical, therefore random choices were made.

ACTIVITY CHECKLIST

Interviews Completed	✓	Number of Samples	4
Drawings Reviewed	✓	Survey Form Completed	✓
Drawings Attached	✓	Site Log Completed	✓
Visual Inspection	✓	Chain-of-Custody Initiated	✓
Number of Photos	0	Exp. Assess. Form Init.	✓

Q.A. Check _____ SIGNATURE _____ DATE ___/___/90
dd mmm yy

M:\ADMNFORM\SSL.frm

WESTON

ASBESTOS SURVEY DATA

0191

BLDG. NO.: 015
INSTALLATION 013

TASK TEAM MEMBERS
ROBERT LYNCH
STAN ANDERSON

W.O. No. 2104-13-01
CLIENT: ARGONNE NATIONAL LAB

BLDG. NAME: MILFORD FAMILY HSG
BLDG. DESCRIPTION: CAREHART SITE

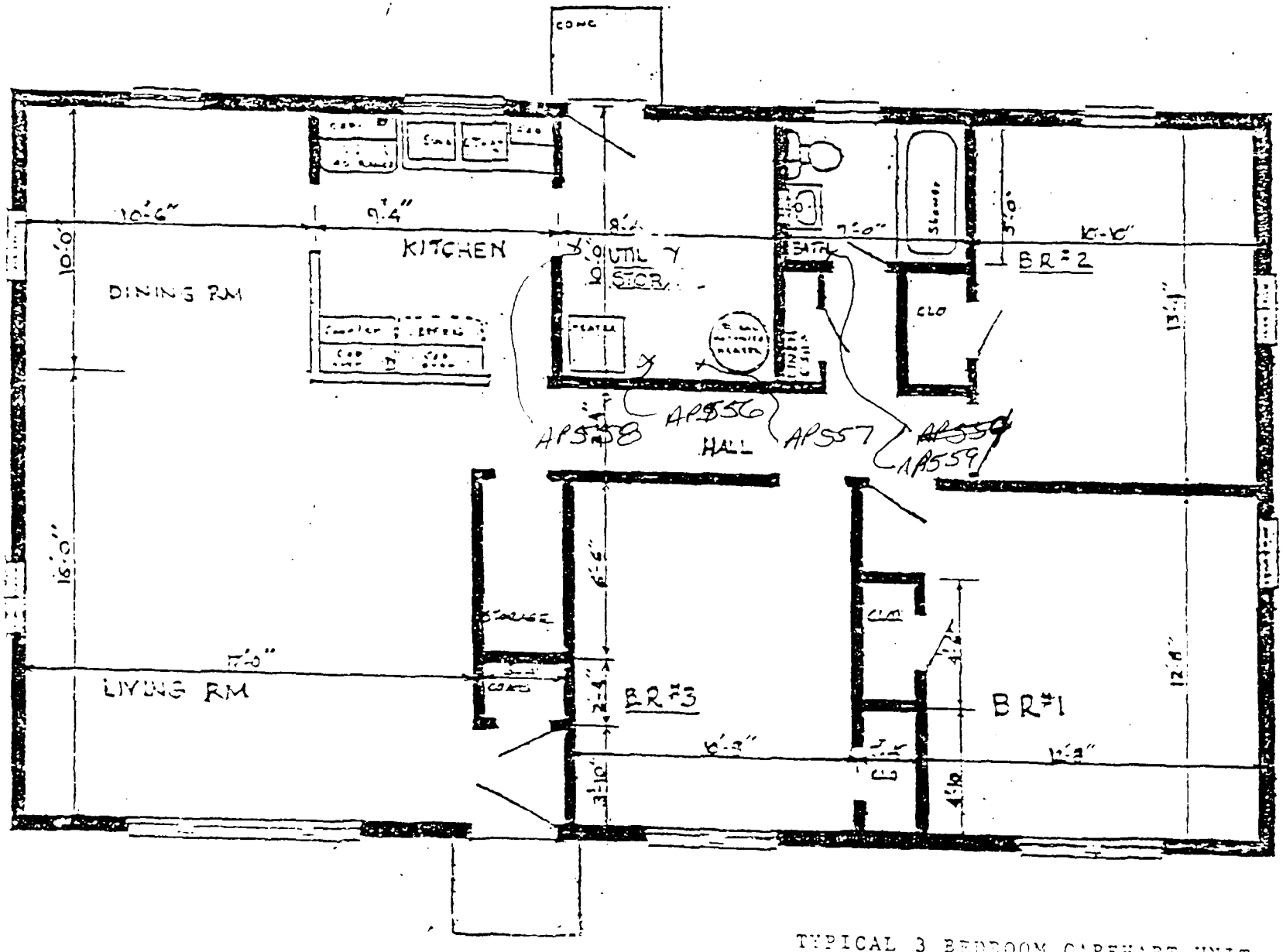
DATE (dd/mm/yy): 12/02/90
TIME ARRIVED: 0830

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
1.	AP5506-13-CT-015-AFT					ALL RMS EXCEPT KIT & BATH	780		10604	01
2.	AP5507-13-CT-015-AFT					DIVIDENTS	15		10606	02
3.	AP5508-13-CT-015-AFT					KITCHEN	75		10608	03
4.	AP5509-13-CT-015-AFT					BATH	20		10609	04
5.	____-_-_-__-A__									
6.	____-_-_-__-A__									
7.	____-_-_-__-A__									
8.	____-_-_-__-A__									
9.	____-_-_-__-A__									
10.	____-_-_-__-A__									
11.	____-_-_-__-A__									
12.	____-_-_-__-A__									

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	9x9 tan floor tile in all rooms except kitchen and bath.
02	9x9 white floor tile over old floor vents and to patch areas.
03	12x12 brown floor tile in kitchen only.
04	brown sheet ~~vinyl~~ vinyl in bath only.
*	All of the materials found are non friable.

TECHNICIAN SIGNATURE Robert F Lynch

QUALITY ASSURANCE SIGNATURE _____



CAPEHART TYPE "A"

TYPICAL 3 BEDROOM CAPEHART UNIT
LOCATED IN ANSONIA, FAIRFIELD,
SHELTON, ORANGE, NEW BRITAIN, CT.

0193

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01

FACILITY/BLDG. NO. MILFORD CT, 2 ALPHA ST.

FACILITY CONTACT JOE NALEAN TELEPHONE NUMBER (203) 468-6934

TECHNICIAN NAME ROBERT LYNCH SIGNATURE Robert J Lynch

TECHNICIAN NAME Stan Anderson SIGNATURE

TIME ARRIVED 0845 TIME DEPARTED 0900 DATE 12 FEB 90
dd mmm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

This is a one story 3 bedroom capehart. There are ~~4 types of~~ 3 types of floor tile and one type sheet vinyl. The outside ~~has~~ beige aluminum siding. The roofing shingles and felt ~~3 tabs~~ are suspect. There is no pipe insulation present. The old floor vents have been sealed.

The decision criteria for this home was based upon available drawings, maintenance records, discussions with housing management personnel. It was found that all homes ~~=~~ at this facility are identical. ~~It~~ This home was

ACTIVITY CHECKLIST

Interviews Completed	✓	Number of Samples	4
Drawings Reviewed	✓	Survey Form Completed	✓
Drawings Attached	✓	Site Log Completed	✓
Visual Inspection	✓	Chain-of-Custody Initiated	✓
Number of Photos	C	Exp. Assess. Form Init.	✓

Q.A. Check ____ SIGNATURE ____ DATE ____/____/90
dd mmm yy

M:\ADMNFORM\SSL.frm

WESTON

SITE SURVEY LOG

(Continued)

one of three homes randomly chosen.

ASBESTOS SURVEY DATA

0195

BLDG. NO.: CE 12
INSTALLATION C1/13

TASK TEAM MEMBERS
STAN ANDERSON
ROBERT LYNCH

W.O. No. 2104-13-01
CLIENT: ARGONNE NATIONAL LAB

BLDG. NAME: WILFORD FAMILY HSG
BLDG. DESCRIPTION: CAPE HART STYLE

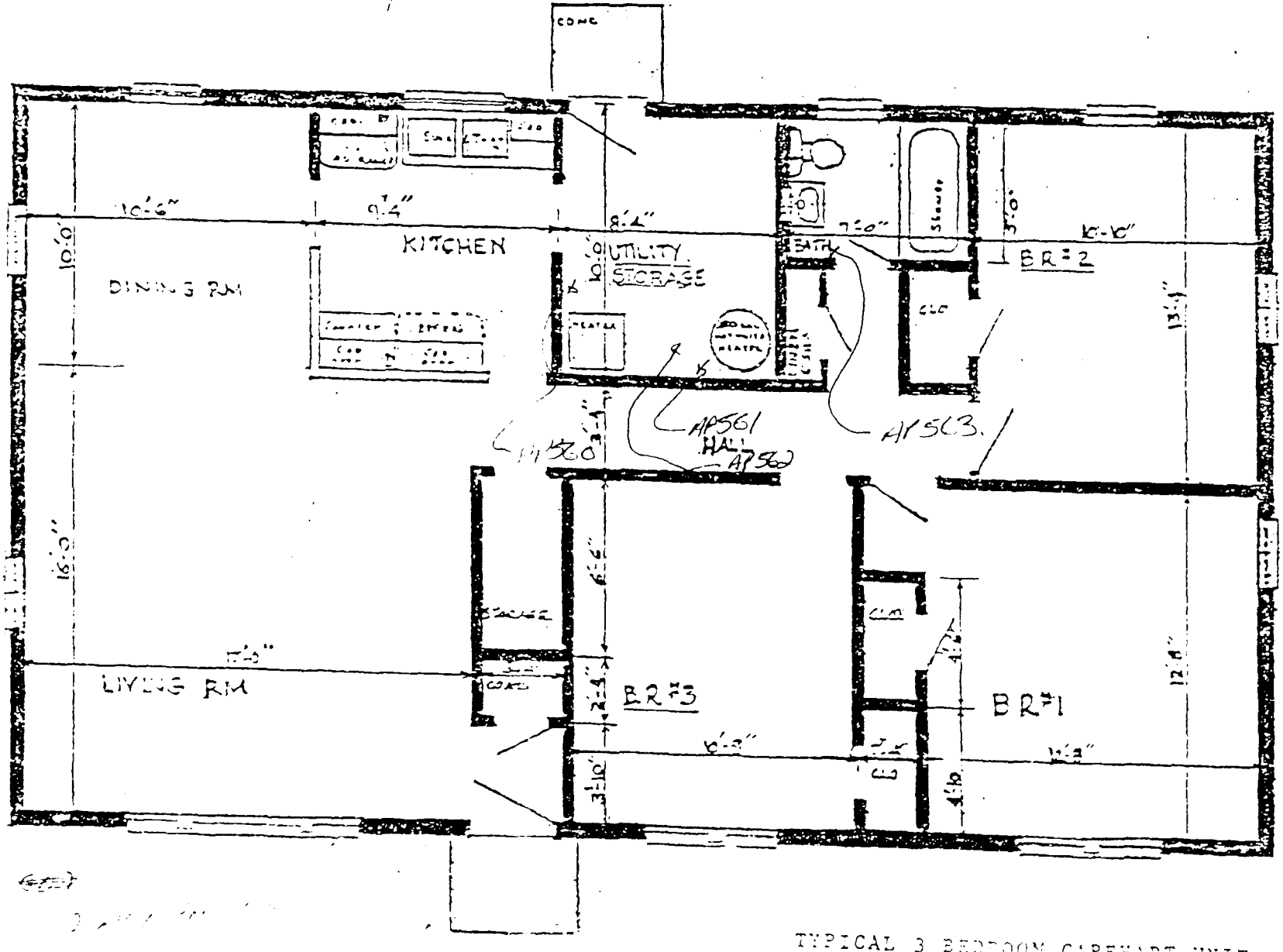
DATE (dd/mm/yy): 12/02/90
TIME ARRIVED: 0845

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
1.	APS60-13-CT-CE12-AFT					KITCHEN	125	_	100V4	01
2.	APS61-13-CT-0002-AFT					OVER VENTS	115	_	100V6	02
3.	APS62-13-CT-0002-AFT					ALL ROOMS EXCEPT KIT	ESZ	_	100V8	03
4.	APS63-13-CT-0012-AFT					BATH	120	_	100V9	04
5.	____-_-_-__-A__						___	_	____	_
6.	____-_-_-__-A__						___	_	____	_
7.	____-_-_-__-A__						___	_	____	_
8.	____-_-_-__-A__						___	_	____	_
9.	____-_-_-__-A__						___	_	____	_
10.	____-_-_-__-A__						___	_	____	_
11.	____-_-_-__-A__						___	_	____	_
12.	____-_-_-__-A__						___	_	____	_

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	12X12 brown floor tile in kitchen only.
02	9X9 white floor tile over vents and ~~floor~~ to patch areas.
03	9X9 tan floor tile in all rooms except kitchen and bath.
04	brown sheet vinyl in bath only.

TECHNICIAN SIGNATURE Robert Lynch

QUALITY ASSURANCE SIGNATURE _____



CAPEHART TYPE "A"

TYPICAL 3 BEDROOM CAPEHART UNIT
LOCATED IN ANSONIA, FAIRFIELD,
SHELTON, ORANGE, NEW BRITAIN, CT.

DEPARTMENT OF THE ARMY
HEADQUARTERS FORT DEVENS
FORT DEVENS, MASSACHUSETTS

REPLY TO
ATTENTION OF

01433-5100

February 22, 1990

Directorate of Engineering
and Housing

SUBJECT: Sealing of floor register openings; Off-Post Housing

Roy F. Weston, Incorporated
1635 Pumphrey Avenue
Attention: Mr. Alex Muncie
Auburn, Alabama 36830

Dear Mr. Muncie:

Per our phone conversation of February 20, 1990, I am writing to inform you that we are aware the floor diffuser openings of the Hull, Randolph, Bedford, Nahant and Burlington, Massachusetts housing areas have been sealed with concrete.

Additionally, all of the housing areas in the Conneticut Defense area with the exception of Shelton, have had the floor diffuser openings plugged with concrete.

Sincerely,

for Richard W. Green III
Chief, Design Branch
Engineering, Plans and
Services Division

APPENDIX A.2. LABORATORY DATA

BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 2104-13-01-0000

Sample Number AP553 through Sample AP563

AO LAB ID NO	CLIENT/CLIENT ID	LOCATION	MATERIAL DESCRIPTION*	DATE RECEIVED	RESULTS** CH	AM	CR	OT	TL	LAYERS	ANALYST
AP553	13-CT-001-AFT	BATH	NF, BR, SHT VINYL	02/19/90	ND	ND	ND	ND	ND	Yes	06806
AP554	13-CT-001-AFT	KITCHN	NF, BR, 12X12 FT	02/19/90	ND	ND	ND	ND	ND	No	06806
AP555	13-CT-001-AFT	ALLRMS	NF, 9X9 FT	02/19/90	1	ND	ND	ND	1	No	06806
AP556	13-CT-015-AFT	ALLRMS	NF, TN, 9X9 FT	02/19/90	1	ND	ND	ND	1	No	06806
AP557	13-CT-015-AFT	OVERVE	NF, WH, 9X9 FT	02/19/90	ND	ND	ND	ND	ND	No	06806
AP558	13-CT-015-AFT	KITCHN	NF, BR, 12X12 FT	02/19/90	ND	ND	ND	ND	ND	No	06806
AP559	13 CT-015-AFT	BATH	NF, BR, SHT VINYL	02/19/90	ND	ND	ND	ND	ND	Yes	06806
AP560	13-CT-002-AFT	KITCHN	NF, BR, 12X12 FT	02/19/90	ND	ND	ND	ND	ND	No	06806
AP561	13-CT-002-AFT	OVERVE	NF, WH, 9X9 FT	02/19/90	1	ND	ND	ND	1	No	06806
AP562	13-CT-002-AFT	ALLRMS	NF, 9X9 FT	02/19/90	ND	ND	ND	ND	ND	No	06806
AP563	13-CT-002-AFT	BATH	NF, BR, SHT VINYL	02/19/90	ND	ND	ND	ND	ND	Yes	06806

* MATERIAL DESCRIPTION

Friable[1], Color[2], System[3], Type

** RESULTS

CH - Chrysotile
AM - Amosite
CR - Crocidolite
OT - Other
TL - Total

FRIABLE[1]

F - Friable
NF - Non-Friable

COLOR[2]

BK - Black
BL - Blue
BR - Brown
GR - Green
GY - Gray
RD - Red
TN - Tan
WH - White
YL - Yellow

SYSTEM[3]

CHW - Chilled Water
DOM - Domestic Water
HHW - Heating Hot Water
STM - Steam
UNK - Unknown

All analyses are performed in accordance with the methods set forth in U.S. EPA 600/M4-82-020, as ammended. Weston's Optical Microscopy Laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program for asbestos fiber analysis (Laboratory Code 1254).

BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 2104-13-01-0000

Sample Number AV028 through Sample AV028

AO LAB ID NO	CLIENT/CLIENT ID	LOCATION	MATERIAL DESCRIPTION*	DATE RECEIVED	RESULTS** CH AM CR OT TL	LAYERS	ANALYST
AV028	13-CT-001-AFT	OVERVE	NF, WH, 9X9 FT	02/19/90	ND ND ND ND ND	No	06806

* MATERIAL DESCRIPTION

Friable[1], Color[2], System[3], Type

** RESULTS

CH - Chrysotile
AM - Amosite
CR - Crocidolite
OT - Other
TL - Total

FRIABLE[1]

F - Friable
NF - Non-Friable

COLOR[2]

BK - Black
BL - Blue
BR - Brown
GR - Green
GY - Gray
RD - Red
TN - Tan
WH - White
YL - Yellow

SYSTEM[3]

CHW - Chilled Water
DOM - Domestic Water
HHW - Heating Hot Water
STM - Steam
UNK - Unknown

All analyses are performed in accordance with the methods set forth in U.S. EPA 600/M4-82-020, as ammended. Weston's Optical Microscopy Laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program for asbestos fiber analysis (Laboratory Code 1254).

ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

Transmission Electron Microscopy
Asbestos Summary Report

Client: Argonne National Laboratories Weston W.O. No.: 2104-13-01-0000

Sample Type: Floor Tiles Sampling Location: Milford

QUALITATIVE ANALYSIS

FLOOR TILES: A 0.5 to 2.0 gram portion of each floor tile sample was ultrasonically disaggregated in four milliliters of deionized, 0.2 μm membrane filtered water. After the coarse fraction settled, a drop of the suspended, clay-sized fraction was placed on a Formvar coated 200 mesh Cu TEM grid and allowed to dry. The grid was carbon coated for thermal stability in the electron beam and examined with a Philips CM12 transmission electron microscope operating at 120 kilovolts accelerating voltage.

ANALYTICAL RESULTS

SAMPLE IDENTIFICATION	RESULTS
AP553-13-CT-001-AFT	Negative
AP554-13-CT-001-AFT	Positive
AV028-13-CT-001-AFT	Negative
AP557-13-CT-015-AFT	Positive
AP558-13-CT-015-AFT	Negative
AP559-13-CT-015-AFT	Positive
AP560-13-CT-002-AFT	Negative
AP562-13-CT-002-AFT	Negative
AP563-13-CT-002-AFT	Positive

(Approved for Transmittal) (Date)

* This test report relates only to the specific items tested.
** These sample results may only be reproduced in full, and are valid only if approved for transmittal.

APPENDIX B.1. FIELD DATA

12 February 1990

ARGONNE National Lab ANL.
(USATHAMA) Base Closure
Program. WO# 2104-13-01
Weston Field Team
FTL - John Williams [signature]

Saadi Almaee SA.

Left Weston 0520 hrs, arrived at
Milford Reserve Center 0945 hrs.
Met DEH. Representative Al Yagovane
Arranged for digging permit/Boring
clearance with utilities.
"Call before you dig" # 1 800-922-4455
Request # I.D. 90070060 Milford
90070086 Shelton
90070093 Ansonia

UTILITIES NOTIFIED

Ansonia	Shelton
Ansonia Derby Water	✓ Yankee Gas
Town of Ansonia	Town of Shelton
✓ United Illuminating	✓ United Illuminating
S. New England Telephone	S. New England Telephone
	Bridgeport Hydraulic.

(1)

12 February 1990

Utilities Notified

Milford

✓ S. Connecticut Gas 776-[illegible]

✓ S. Central Regional Water [illegible]-4-6671

S. New England Telephone / 420-[illegible] [illegible] 777-6511

✓ U. Illuminating

48. Hrs. notice required for Clearance. Since Bongpaint [illegible] cleared until 13 February 1990 we will reschedule and sample Portland if given approval. Spoke with Weston PM Lew Nelms, he approved Portland Sampling today. Will meet with Utilities foreman AM at Alpha Dr. Milford to clear location.

Left Reserve station with Al @ 1110 hrs for Portland. Ate lunch on way to site. Stopped at Milford

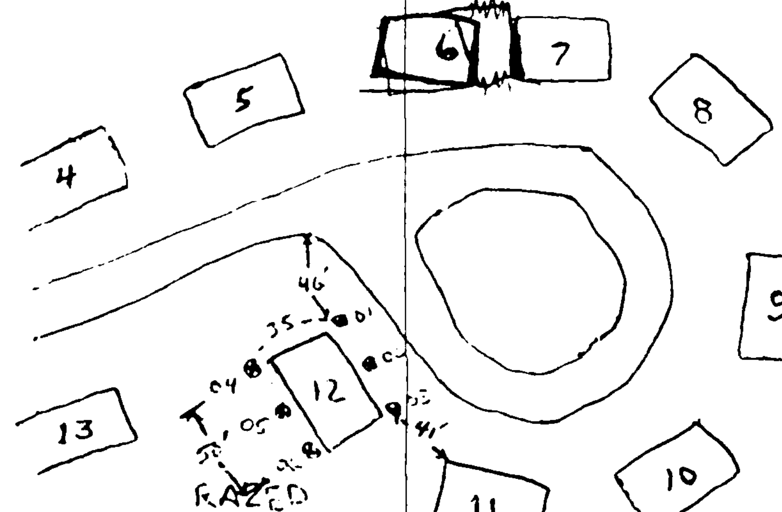
* to check/[illegible] UST location. Unit # 16 and 17. Could not find fill pipe or location of tank. Al gave us approximate locations. Unit # 20 inundated with water. Went to Portland pesticide sampling

(2)

Monday 12 February 1990 [initials]

Portland CT. Family Housing Unit.

Pesticide Soil Sampling Housing UNits #3 and #12 Arrived 1325 hrs.



⊗ indicates boring location and # (ie. - ⊗ 01)

Site 12 Pesticide Soil Sampling. Scattered Remnants of foundation and Asphalt Driveway evident. Presently a playground with a swing set. Selected 6 Sampling locations based on physical evidence and orientation of HU 12 as shown in S&A plan. Soils were sampled by removing grass, root mat and debris on surface.

(3)

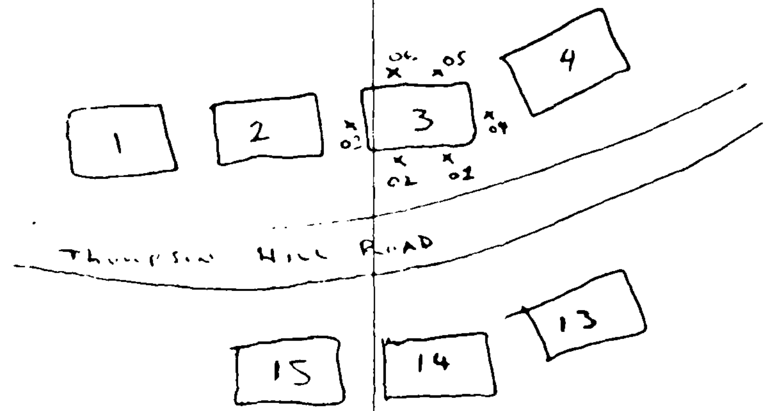
Sample I.D.	Boring No.	HNu Reading	Container	Depth
33-CT-12-SHF	-01	ND	250ml	3"-9"
33-CT-12-SHF	-02	ND	↓	↓
33-CT-12-SHF	-03	ND	↓	↓
33-CT-12-SHF	-04	ND	↓	↓
33-CT-12-SHF	-05	ND	↓	↓
33-CT-12-SHF	06	ND	↓	↓
3				
33-CT-3-SHF	01	ND	↓	↓
33-CT-3-SHF	02	ND	↓	↓
33-CT-3-SHF	03	ND	↓	↓
33-CT-3-SHF	04	ND	↓	↓
33-CT-3-SHF	05	ND	↓	↓
33-CT-3-SHF	06	ND	↓	↓

Sampled 3-8" of upper soil using dedicated scoopulas (stainless), Decomed scoopulas using following:
DI rinse, Alchonox wash,
DI final rinse.
Proceeded to Unit #3. Collected pesticide samples around House foundation at locations shown on pg (5). Samples taken @ 6" out from foundation using methods

Monday 12 February 1990 P

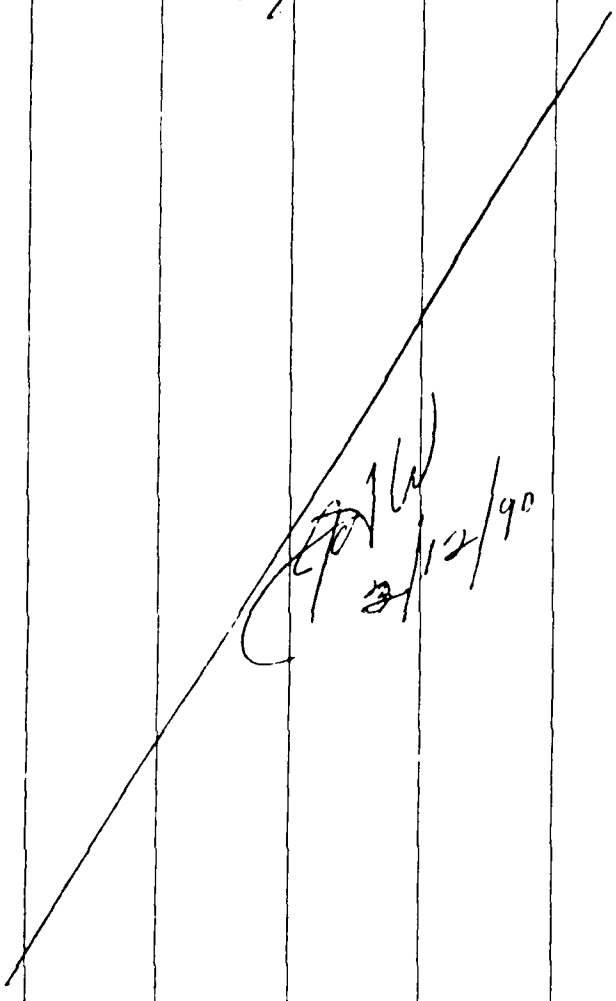
PORTLAND, CT

BORING LOCATIONS



described above. About a 3' wide stretch of soil front and back, side is a garden turn. Evidence of dormant shrubs and decorative plants. Childrens toys plastic shovels, scoops and buckets where playing in garden.
Finished taking sample and Decomed sampling equipment using method described above.

Finished site maps, Chain of Custody documentation and Log Site at 1535 hrs. Drove back to Milford. Arrived Milford @ 1640 hrs.



(6)

Tuesday 13 February 1990

MILFORD, CT

Met Al at Motel 0755 hrs.
Called Utilities to verify Clearance
Received verbal over phone from
UI for Shelton and Ansonia.
Went to Site with DEH @ 0840 hrs
Housing Unit #16
Arrived Milford 0856 hrs. Set up
for Hand Augering. Mark and Al
went on to Shelton to do Groundwater
and Utility Trench Sampling
0920 United Ill. Cleared area - on person
0940 S. Cent. Reg. Water cleared area - on person
Conducted HA and augered to 3.5'

SB-01	1.0 ft. deep	ND	HNu
SB-02	3.5 "	ND	"
SB-03	2.5 "	ND	"
SB-04	1.5 "	ND	"

DEH Rep said he requested
Police prints from his Engineering
group weeks ago. Hasn't
seen a thing or heard from
them. Prints not available.

(7)

MilfORD, CT

SE-01 through 04 General Soil Description

Silty F-C Sand, some med-coarse gravel and rock fragments. Subrounded to angular. Mottled - water staining. Olive green to reddish brown. Moist (except SE-04 wet.) Some non plastic. No odor or sign of fuel staining.

SE-02 Housing Unit # 16

Hand augered to 3.5 feet BGS

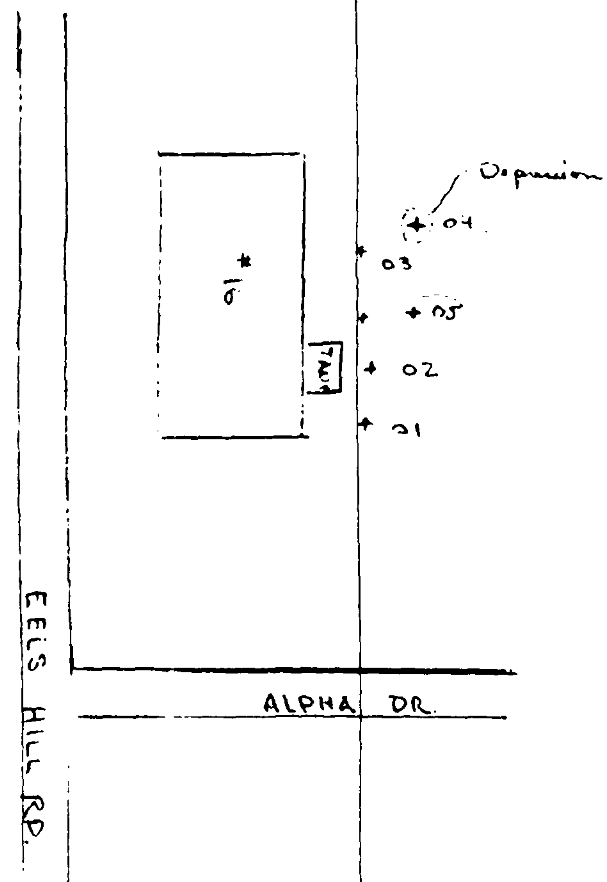
Sample	01	2-3.5 feet	13-CT-16-SST-02-01	
		Composite of Bucket Auger		1130 hrs
Photo # 3,4	02	3.5-5.4'	13-CT-16 SST-02-02	
		Split Spoon / Mass drawn		1150 hrs
Photo # 5	03	5.5 7.3	13-CT-16-SST-02-03	
		Split Spoon / 4,4,4,30		1210 hrs
Photo # 6,7	04	7.2 to 8.4	13-CT-16-SST-02-04	
		Split Spoon		1245 hrs

Set up tripod to Drive SE-04
Decontaminated Split Spoon and other equipment.

(8)

Tuesday 13 February 1990

MILFORD



(7)

SB-04 01 1.5-2.0 13-CT-16-SST-04-01 1320h
Photo# 8,9 Split Spoon/Mass drive
02 3.-3.5 1435
Photo# 10,11 Split Spoon/Mass drive by 140 lb
Hammer. 50/3" refusal.
No Sample Collected.

Decontaminated Spoons and bucket auger.

Disassembled Cathead, tripod, and secured site.

Packed Samples, filled out chain of custody & Sealed.

Departed site @ 1705 hrs.

J.A. 2/14/90

Wednesday 14 February 1990

Milford CT.
FHU # 16 SB-05
0730 hrs Met Al Ycgrovane & Brad Baily.
0800 hrs Arrived Milford FHU# 16. Set up Tripod, Power Cat Head, Hand Auger at Soil boring location SB-05.
SB-05 Identified clay with 02 and 04 (depression) as potential tank location. DEH not exactly sure where old locations were. Calibrated HNU
Set up and Sampled from 0815 to 1230 hrs
1215 Moved tripod to Housing Unit #10 before lunch 1215 to 1230.

J.A. 2/14/90

MILFORD, CT   Wed 14 Feb 90

SB-05

01   2'-2.5   13-CT-16-SST-05-01   1100hrs
Split Spoon
5" Recovery.

02   2.5-4.3   13-CT-16-SST-05-02   1120hrs
Split Spoon.   BL Ct. 9,10,11,14
1.9' Recovery

Photo #15   03   4.3-6.1   13-CT-16-SST-05-03   1145
BL   12,22,27,33
1.9' Recovery

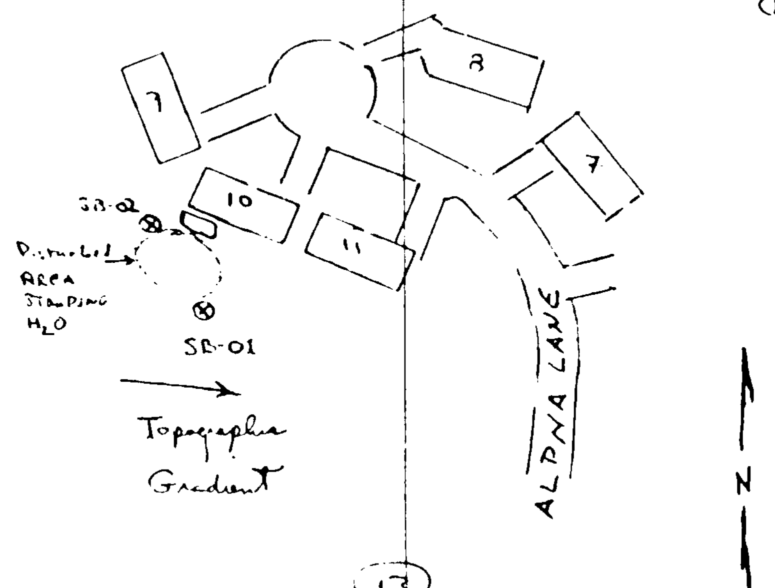
04   6.1-8.0   13-CT-16-SST-05-04   1215hrs
BL   10,19,47,46
.9' Recovery
wet at @ 7.5' Quartzite fragment
in bottom of Spoon.

Went to lunch @ 1240 hrs.
1330   Arrived back at site and started
setting up/breaking down tripod
Decontaminated Auger, Spoon and
Equipment.

Wednesday 14 February

Housing Unit #10

1330hrs Set up Equipment, Tripod at
Housing unit #10
DEN Reps gave us what we
felt was a very close approximate
location of the old Underground
Storage tank. Location was
characterized by a large
subsidence depression inundated
with water. Started Sampling SB-01
@ 1420 hrs. Brad Baily (ANL)
arrived on Site to Observe Sampling.



Wednesday 14 February

HU 10

SB-01 01 2.3-4.1 13-CT-10-SST-01-01
Split Spoon

[illegible]

SE-02 02
Refused 54/6"

SB-02 01 2.5-3.5 13-CT-10-SST-02-01 1010

02 3.5-5.5 13-CT-10-SST-02-02 1020

50/3"

D_2 cannot Equipment, Potable, Alconox H_2O wash, DI rinse, Decontaminated Equipment. Left site 1755 hrs

Thursday 15 February

APPENDIX B.2. LABORATORY DATA

ROY F. WESTON, INC.
Lionville Laboratory

Client: USATHAMA-ANL
RFW # : 9002L609
W.O. #: 2104-13-01-0000

U = Indicates that the compound was analyzed for but not detected. The detection limit for the sample (not the method detection limit) is reported with U (e.g., 10u).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10mg/L and a concentration of 3mg/L is calculated, it is reported as 3J.

NA = Not Applicable. NR = Not Required.

NC = Not calculable, results below detection limit.

The method used for the analysis of petroleum hydrocarbons is EPA Method 418.1 (USEPA 600/4-79-020). Solid samples are extracted using Method 9071 (USEPA SW846) then analyzed by EPA Method 418.1.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analysis:

. Blank spike recoveries were acceptable.

. Blanks were free of contamination.

Samples Received : 02/23/90
Date of Extraction: 02/27/90
Date Of Analysis : 03/08/90

for Stephen D. Vesser
J. Michael Taylor
Project Director
Lionville Analytical Laboratory

3-13-90
DATE

Roy F. Weston, Inc. - Lionville Laboratory
Petroleum Hydrocarbons by IR

RFW Batch Number: 9002L544 Client: USATHAMA-ANL Work Order: 2104-13-01-0000 Report Date: 03/14/90 14:39 Page: 1

Sample Information	Cust ID:	13-CT-16-SST -02-01	13-CT-16-SST -02-01	13-CT-16-SST -02-01	13-CT-16-SST -02-01	13-CT-16-SST -02-02	13-CT-16-SST -02-03
	RFW#:	013	013 REP	013 MS	013 MSD	014	015
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Petroleum Hydrocarbon		14	33	I	I	15	33

Sample Information	Cust ID:	13-CT-16-SST -02-04	13-CT-16-SST -04-01	13-CT-16-SST -05-01	13-CT-16-SST -05-02	13-CT-16-SST -05-03	13-CT-16-SST -05-04
	RFW#:	016	017	018	019	020	021
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	2.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Petroleum Hydrocarbon		190	8.6	3.8 J	6.7	3.0 J	9.3

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Roy F. Weston, Inc. - Lionville Laboratory
Petroleum Hydrocarbons by IR

RFW Batch Number: 9002L544 Client: USATHAMA-ANL Report Date: 03/14/90 14:39
Work Order: 2104-13-01-0000 Page: 2

Sample Information	Cust ID:	13-CT10-SST-01-01	13-CT10-SST-02-02	PBLK	PBLK BS
	RFW#:	022	024	90DHC047-MB1	90DHC047-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Petroleum Hydrocarbon		6.6	13	3.0 U	84 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

ROY F. WESTON, INC.
Lionville Laboratory

Client: USATHAMA-ANL
RFW # : 9002L544
W.O. #: 2104-13-01-0000

U = Indicates that the compound was analyzed for but not detected. The detection limit for the sample (not the method detection limit) is reported with U (e.g., 10u).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10mg/L and a concentration of 3mg/L is calculated, it is reported as 3J.

NA = Not Applicable. NR = Not Required.

NC = Not calculable, results below detection limit.

The method used for the analysis of petroleum hydrocarbons is EPA Method 418.1 (USEPA 600/4-79-020). Solid samples are extracted using Method 9071 (USEPA SW846) then analyzed by EPA Method 418.1.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analysis:

- Blank spike recoveries were acceptable.
- Blank spike and blank spike dup recoveries were unobtainable due to matrix interference.
- Blanks were free of contamination.

Samples Received : 02/16/90
Date of Extraction: 02/21/90
Date Of Analysis : 03/12/90

Stephen D. Veyth
J. Michael Taylor
Project Director
Lionville Analytical Laboratory

3-14-90
DATE